

Find the derivative of the function.

1.  $y = (3x - 2)^4$

2.  $f(x) = 5(2 - x^2)^3$

3.  $y = (6 + 3x)^{2/3}$

4.  $f(x) = \sqrt{x+3}$

5.  $g(x) = \sqrt[3]{x^2 - 9}$

6.  $y = \frac{-2}{(x^2 - 3x - 4)^2}$

7.  $f(x) = \left(\frac{3}{3-x}\right)^2$

8.  $g(x) = \frac{3x}{(x+1)^3}$

9.  $y = \sqrt[3]{2x^2 - 5x + 3}$

10.  $h(x) = x^3(5 - 3x)^4$

11.  $y = x\sqrt{1 - x^2}$

12.  $y = \frac{1}{2}x^2\sqrt{4 - x^2}$

13.  $f(x) = \frac{x}{\sqrt{x^2+1}}$

14.  $s(t) = \left(\frac{t-3}{t^2+2}\right)^2$

15.  $y = \frac{-2}{\sqrt{x+1}}$

Find the derivative of each trigonometric function using the Chain Rule.

16.  $y = \sin 3x$

17.  $y = \cos^2 x$

18.  $f(x) = \sin x^2$

19.  $y = \cos \sqrt{x}$

20.  $g(\theta) = 4 \sin^2(\pi\theta)$

21.  $y = \sin(\cos 3x^2)$

Find the equation of the tangent line at the given point.

22.  $y = \sqrt{x^2 + 3x + 6}$  at  $(2, 4)$

23.  $y = (x^2 + x - 2)^2$  at  $(-1, 4)$

24.  $y = \sin 2x$  at  $\left(\frac{\pi}{3}, -1\right)$

25.  $y = (9 - x^2)^{1/3}$  at  $(1, 2)$